



Paper to be presented at
DRUID15, Rome, June 15-17, 2015
(Coorganized with LUISS)

The role of entrepreneurial deviance in social innovation: The case of introduction of biodynamic practices in cotton cultivation in Egypt

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Abstract

This paper theorizes the dynamics of innovation processes that deviate from institutionalized norms of acting and that are directed at social change. By rejuvenating a tradition that looks at innovation from a sociological perspective and conceptualize innovation as a deviant behavior, it aims to contribute to our understanding of how and under what conditions the processes of innovation start and, once initiated, how they evolve. Through the analysis of an in-depth case study of introduction of organic practices in cotton cultivation in Egypt, the paper focuses on actions of a social enterprise which, unable to act on the opportunities within its institutional context, chose to pursue its goals through illegitimate means of acting. It shows that deviant innovative practices can be legitimized by keeping multiple evaluative principles in play and by managing and exploiting their frictions.

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Keywords: innovation process; institutionalized practices; positive deviance; negative deviance; blocked opportunities; liability of deviance; deviance asset; hidden actor; resistance; social entrepreneurship.

1 Introduction

Innovation, a “production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres” (Crossan and Apaydin, 2010: 1155), has been intrinsically related to entrepreneurship through their sharing of the process of discovery, evaluation, and exploitation of opportunities and novelties (Shane and Venkataraman, 2000). Although innovation has been studied both as a process and an outcome, those accounts that do talk about the dynamics of innovation, tend to focus on the outcomes, such as the alteration and creation of norms (e.g., Meek et al., 2009), property rights (e.g., Ostrom, 1990) and government legislation (e.g., Fromartz, 2006). Far less attention has been given to developing a *general* understanding of the trajectories that bring about the outcomes of innovation.

Through this study, by rejuvenating a tradition that looks at innovation from a sociological perspective and conceptualizes innovation as a deviant behavior, I aim to contribute to general understanding of how and under what conditions the processes of innovation start and, once initiated, how they evolve. Furthermore, I seek to contribute to the body of knowledge on entrepreneurship directed at social change, specifically to our understanding of social entrepreneurship, a phenomenon that involves exploring and exploiting opportunities that lead to creation of a novel, more effective, efficient, and sustainable solution to a social problem “for which the value created accrues primarily to society as a whole rather than private individuals” (Phills Jr. et al., 2008).

In this study, relying on the ability of qualitative data to explicate the complex social processes, I use a single case study for theory building (Eisenhardt and Graebner, 2007) about the innovation processes. The case is about introduction of new production practices that deviated from institutionalized norms of acting. The setting for my study is

the cotton cultivation sector in Egypt from 1989 to 1993 – a period during which Egyptian cotton cultivation practices changed dramatically. Prior to this period, cotton growers primarily used conventional cultivation practices, which included spraying large quantities of chemical pesticides over their cotton fields in order to protect them from pests. By 1993, Sekem, an Egyptian social enterprise, had developed an organic method of cotton protection that had become the new standard for cotton growers in Egypt. The shift from conventional to organic practices of cotton protection was associated with significant obstacles and resistances on both symbolic and material levels, as well as backings from various actors. Significantly, although initially rejected, the new method eventually received endorsement from the Egyptian government, which in 1993 banned the spraying of chemical pesticides over cotton fields. This case study is thus an account of how production practices (organic methods of cotton protection) within an economic sector (cotton cultivation sector) changed. I am particularly concerned with how Sekem managed the change process that involved numerous actors with diverging views towards new practices.

Using insights from institutional theory, sociology, and entrepreneurship I develop a process model of innovation. My analysis addresses the role of institutionalized norms in preventing and enabling entrepreneurs (individuals or organizations) in acting on opportunities. I suggest that the innovation process begins when entrepreneurs choose to act upon '*blocked opportunities*' – opportunities that cannot be exploited through institutionalized means of acting. By choosing to depart from institutionalized means of acting, entrepreneurs must engage in deviant behavior to initiate the innovative process. This article further suggests that the innovation process involves multiple evaluative principles, as well as the management and exploitation of frictions resulting from the interplay of these principles. I argue that, by managing their '*liability of deviance*' (i.e., negative repercussions of norm-violating behavior) and '*deviance assets*' (i.e., positive implications of norm-violating behavior often referred to as positive deviance) entrepreneurs can ensure wider legitimization of their means of acting and bring the innovation process to successful completion. I also suggest that deviance management strategies evolve at different stages of opportunity enactment as a means of dealing with various forms of open and clandestine resistance.

2 Literature review and theorization framework

Recent institutional theory based research has focused on organizational agency (e.g., Deephouse, 1999), organizational innovation and change (e.g., Greenwood and Hinings, 1996), organizational entrepreneurship (Aldrich and Fiol, 1994), and organizational strategy (e.g., Oliver, 1991). This work has shown that organizations not only engage in novel activities, but also sometimes violate institutional norms by breaking both formal and informal rules governing organizational action (Elsbach, 1994). However, in parallel to their new appreciation of organizational agency, institutional scholars continue to recognize severe costs for the organization caused by atypical actions and rule violations that from an institutional perspective are capable of conferring a mantle of deviance on the organization. Specifically, they argue that organizations embarking on new and innovative pathways encounter severe problems on account of their newness and deviation from the rest of the organizational population. Stinchcombe (1965) described this condition as the '*liability of newness*.'

Practices are recognized forms of activity that guide behavior according to the situation (Pentland and Reuter, 1994). An activity is recognized by others as an instance of a practice when it conforms to specific social expectations. Social expectations are based on rules, norms, and hypernorms. Scholars have highlighted the importance of work done to disrupt, defend, and maintain practices. Lawrence and Suddaby (2006), for instance, analysed the disruption of practices through dismantling the normative, cognitive, and regulative mechanisms that support them. Processes that are experimental or unfamiliar systematically face a problem of legitimacy (Lounsbury and Crumley, 2007) because they are regarded as deviant behavior.

Management literature includes two distinct streams of research on deviance (for review see Warren, 2003) that share a common definition for the underlying behavior – a voluntary departure from norms and rules, and voluntary resistance to social pressures to conform. The first research stream highlights the negative, undesirable, and destructive nature of deviance. It assumes that rules and norms are functional and thus those who fail to follow them are assumed to be “deviants” either focused on personal gain or trying to inflict harm on others (Morrison, 2006). In contrast, the scholars following the second stream argue that the conceptualization of deviance as purely self-interested or destructive behavior is much too narrow (Morrison, 2006). They reason that rules can be too rigid and counterproductive, thus creating tensions between the desire to adhere to rules on one hand and the desire to respond appropriately to situational demands on the other. At times, these researchers point to the desire to do a better job or to do what is believed to be appropriate in a given situation as motivation to disregard of the rules in spite of the risk of sanction. In these instances, deviance becomes a prosocial behavior, an act performed with the intention of promoting the welfare of an individual, group, or organization (Brief and Motowidlo, 1986).

Merton (1968) argued that under certain socio-economic conditions a disjuncture within the cultural system between the well-defined, established, and accepted goals (values) which define our lives, and the culturally determined, legitimized, and institutionalized means for achieving these goals may result in strain that pressures actors to engage in deviant behavior and follow one of five modes of adaptation: conformity, ritualism, retreatism, rebellion, and innovation. Innovation, according to Merton, is the mode where an agent adopts illegitimate means in pursuit of culturally accepted goals. Participation in innovative means of achieving goals is mediated by the extent to which individuals have internalized cultural norms and personal values. In order for deviant behavior to occur, it is necessary to have individuals able to resist the pressure to abandon their innovative means of acting. Building in work of Merton, Warren (2003) presented an integrative typology of deviance using a behavioural approach to deviance that emphasizes the importance of reference groups and normative standards as the basis for “labelling” deviant behavior. She differentiated among four types of behavior based on whether an actor conforms to or deviates from normative standards (e.g., hypernorms) and reference group norms. She described behavior that conforms to normative standards but deviates from reference group norms as ‘constructive deviance’ (Warren, 2003: 628).

However, extant work on deviance and innovation fails to address two important issues. First, an agent may face multiple reference group norms that may be diametrically opposed; that is, what is deemed to be constructive for one might be destructive for the other. Second, deviance perception may change over time; that is, for the same reference group certain behavior might be perceived as destructive at one point in time and constructive at another point in time.

In this paper, I posit that ‘liability of newness’ may be overstated in the institutional literature. I agree that novel and innovative organizational processes can be risky for the innovative organization, contributing to a lack of legitimacy that in turn prevents it from acquiring needed resources. Nonetheless, merely doing something different or new is not necessarily always as risky as characterized by institutional literature. For instance, novelty and innovation (e.g., new production technologies) can often offer a distinct advantage in increasing market share and differentiating the organization from its competitors. Further, many new organizational products, processes, and practices are rapidly accepted, diffused, and even institutionalized (e.g., Abrahamson, 1996) in which case, newness is less of a liability and more of an asset.

In my theorizing, I conceptualize norms and behavior as varying across continuum enabling us not only to analyse the existence of deviance but also its polarity and magnitude¹. The ‘polarity of deviance’ indicates the direction of departure of observed behavior with respect to applied normative standards. Directional conceptualization of deviance departs from most intuitive uses of the term deviance that traditionally considers deviance as an undesirable departure from the norm. While two reference groups may agree that certain behavior is deviant, due to their different normative standards one group may perceive deviance as desirable or having a positive polarity (‘positive deviance’) while the other as undesirable or having a negative polarity (‘negative deviance’). However, even when two reference groups agree on the polarity of deviance, independent from the normative standards they use, the distance between observed behavior and relevant norms may be perceived as different. One reference group may perceive certain behavior as a minor departure from the norm, while the other as a major one. Thus, the ‘magnitude of deviance’ describes the perceived difference between observed behavior and applied normative standard. Furthermore, my model of the process of institutional innovation emphasizes temporal changes both in polarity and in magnitude of deviance as a result of strategic acting directed at behavior and at deviance perception management. Thus, I adopt a dynamic and strategic view of deviance that permits me to consider ‘temporal variability of deviance’ where its polarity and magnitude, as seen by the same reference group, change over time.

Thus, in order to understand the innovation process and associated issues related to organizational legitimacy, I propose using the concept of deviance as a special case of non-conformity that carries stronger connotations of both improper and desirable behavior rather than focusing simply on novelty or difference. While all deviant actions are in some way atypical, all atypical actions are not necessarily deviant. Hence I introduce two new concepts: ‘liability of deviance’ – an additional degree of organizational disadvantage conferred on an organization because of its norm-violating behavior – and, ‘deviance asset’ – an additional degree of organizational advantage conferred on organization because of its norm-violating behavior. Whether novel and innovative organizational practices will be considered a liability or an asset will depend upon audience self-interest, comprehensibility of new practices, and taken-for-grantedness of old practices.

¹ Concepts of deviance polarity, magnitude and temporal variability have are not fully and explicitly integrated with the data analysis and discussion in the paper. I am presenting them here as a potential theoretical framework open for discussion and suggestions.

3 Data, research context and the narrative

In order to study the process of innovation directed at social change, the selection of an appropriate research site was vital. Through an existing research collaboration, I was able to secure privileged access to the site to collect data on the innovation processes at Sekem. In the summer of 2008, I organized a three-week visit to Egypt during which I collected most of the field data for this study. In this paper, I focus on the process of introduction of biodynamic cotton cultivation to agriculture in Egypt. I selected this example of the innovation as the focal process because of its profound and lasting economic, social, and environmental relevance and because of its visibility and importance to various constituencies (Dutton and Dukerich, 1991). Furthermore, the unusual richness of detail and transparency of the process of theoretical interest made it an 'extreme case' (Eisenhardt, 1989) that allowed me to reflect fully on the parameters identified as important to my theoretical conceptualization.

In order to precisely reconstruct the sequence of events in the focal episode, I collected data from a variety of sources, including interviews, observations, founder memoirs, and archival sources. During my visit to Sekem in the summer of 2008 I conducted 29 interviews that lasted between 30 and 90 minutes. I also engaged in passive and, to a lesser degree, active observation activities ranging from visits to the Sekem's facilities to attendance and participation of company events. Throughout the course of my research, I collected an extensive set of internal and external documents on Sekem, Egypt, and agricultural and cotton cultivation sector in Egypt. While some documents were directly relevant to the analysis of the focal process, others were more general and referred either to events at Sekem during the key period between 1989 and 1993 or to Sekem, Egypt, or biodynamic farming in general. In adherence to guidelines for ensuring the rigor of case study research (e.g., Ariño and Ring, 2010; Gibbert and Ruigrok, 2010), in Appendix A, I outline the procedures I followed in order to ensure internal and external validity and reliability of my research design.

Egypt from the 1950s until the 1990s

Social change does not occur in vacuum. Thus, before I describe and analyse the focal process, it is essential to understand the context within which the innovation process started and evolved. I base my review on extensive historical accounts of social, economic, political, and cultural changes that took place in Egypt from the early 1950s through the early 1990s (e.g., Elmusa, 1990; Metz, 1991; Shamir, 1995; Sharp, 2009).

In 1952, a military coup d'état, known as the '1952 Revolution' marked the turning point in modern Egyptian history that brought about profound social, political, economic, and cultural change (Fay, 1990). The revolution led to full independence from the UK, the overthrow of the royal regime and establishment of the republic, and the introduction of new political and legal structures (Hinnebusch, 1990). It unleashed social mobility and changed customs, habits, and moral and material values (Amin, 2006).

However, by the early 1990s, economic crises and restructurings, together with the commencement of integration of the Egyptian economy into the global economy, undermined the new regime (Rutherford, 2008). These changes weakened key institutions of state control, particularly the public sector and the subsidy system, and eventually started to erode the ideology and legitimacy of the regime. Gradually, Egypt morphed into a "hybrid regime of Arab democracy" (Rutherford, 2008: 1) where both authoritarian and democratic political order came together and persisted in the liberal and Islamic

constitutionalism (Hinnebusch, 1990). For instance, Egyptian laws reflected the heritage of Islamic legal and social patterns (Hooglund, 1990). At the same time, Islamic values and teachings strongly influenced habits, attitudes and personal values among Egyptians (Nydell, 2006) and Islam permeated almost all spheres of daily life (Winter, 1995). The devotion to Islam was the strongest among Egypt's largely uneducated urban and rural lower classes, which lacked a thorough knowledge of the religion (Hooglund, 1990). Although the typical village imam or prayer leader had only a rudimentary knowledge of Islam and his work was limited to reading prayers and sermons prepared by others and to reciting the Qur'an verses, he was highly influential and respected among the local population (Hooglund, 1990).

Agriculture and cotton cultivation in Egypt

Egypt lies within arid and hyper-arid climate zones in northeast Africa and the southwest Middle East. Only about three percent of Egypt's land is suitable for farming and more than 90 percent of arable land is limited to areas in the Delta on the north, a narrow corridor along the Nile between Aswan and Cairo, and a strip along the Mediterranean (CAPMAS, 1994). In 1987, the United Nations Food and Agriculture Organization estimated Egyptian arable land per capita to be 0.05 hectares per capita, the lowest in the world. However, helped by the warm weather, Egyptian farmers were able to practice multiple cropping, effectively increasing cropped area from 3.9 million hectares in 1952 to 4.8 million hectares in 1987 (Elmusa, 1990).

By the late 1980s, relative scarcity of arable land coupled with high population growth, made Egypt dependent on external sources for almost half of its food supply. Furthermore, the construction of the first stage of Aswan High Dam in the 1960s altered a farming tradition that went back thousands of years. The dam cut off the supply of Nile sediment and farmers had to resort to intensive use of artificial fertilizers. Lack of proper drainage contributed to soil salinization that, together with over-use of chemical fertilizer, gradually diminished the fertility of the soil. Nevertheless, in 1988, agriculture remained a key sector of the Egyptian economy, contributing more than 20 percent of GDP, approximately nine percent of all exports, and accounting for nearly one-third of total employment (Elmusa, 1990).

Over the last two centuries, Egyptian agriculture has undergone profound changes due to the use of new irrigation technologies, mechanization, pesticides, chemical fertilizers, plastic greenhouses, and new seed varieties. One of the most important changes to the cropping pattern in Egypt's modern history was the introduction of long-staple cotton in the early 19th century (Elmusa, 1990). The invention of this new variety of cotton, helped by the suitability of the Nile Valley for cotton cultivation, advanced irrigation methods, and the world cotton shortage arising from the American Civil War in the 1860s (Fay, 1990), contributed to a rapid expansion of cotton cultivation in Egypt. Because of its large share of the total world output, the Egyptian supply of long-staple cotton was one of the key factors affecting world cotton prices. Egyptian cotton became a prized commodity in the world market and a significant source of foreign currency for the Egyptian government. Overall, the importance of the agricultural sector to the economy and the country's reliance on foreign currency from cotton exports made Egypt a 'cash crop' economy highly dependent upon the export of cotton.

Immediately after the 1952 revolution, the state began implementing land-reform programs to extend and alter the irrigation system, reclaim new land, and regulate input

and output prices as well as land use. The government regulated crop areas according to manifold economic, technical, and social criteria (Bautista and Gehlhar, 1996). State intervention produced mixed results, both economically and socially (Elmusa, 1990). As cotton is highly susceptible to pests, Egyptian cotton growers were the main consumer of pesticides. The government conducted massive spraying of cotton fields, further increasing cotton production cost, causing soil contamination, and frequently poisoning farmers. Gradually, between 1952 and 1987, many cotton farmers switched to other plants, effectively reducing the area under cotton cultivation by almost 50 percent (Springborg, 1990). However, between 1952 and 1980, thanks to the availability of new cotton varieties and the government directed pest-control program, cotton yields increased by 50 percent, cushioning Egypt from the negative impact of the reduction of area under cotton cultivation on the total cotton output (Bautista and Gehlhar, 1996) in the short term.

Global market fluctuations in the price of cotton left the vulnerable Egyptian economy at the mercy of good harvests (Springborg, 1990). Without a strong, diverse economy, Egypt could not generate enough capital to fund its modernization, leading it to become financially dependent on foreign aid. Typically this assistance was provided as a direct cash transfer to the Egyptian government or as part of the Commodity Import Program, which provides hard currency to the Egyptian private sector to purchase goods such as fertilizers and pesticides (Sharp, 2009).

Narrative of the focal process

Using my data, I have re-constructed the narrative of the focal process. Narratives are analytic constructs that unify a number of actions, “which might otherwise have been viewed as discrete and disparate, into a coherent relational whole that gives meaning to and explains each of its elements and is, at the same time, constituted by them” Griffin (1993: 1097).

In 1989, a routine test for traces of chemical pesticides in Sekem’s medical plants produced positive results. Immediately, Sekem initiated a search for the source of the pollutants and discovered it to be airborne pesticides from crop dusting planes used to treat neighbouring cotton fields up to twenty times during the cotton growth period. Sekem’s founder, Dr. Ibrahim Abouleish, met with the Egyptian minister of agriculture and land reclamation and asked him to ban spraying of chemical pesticides by crop dusting planes. Although the minister rejected the request, he encouraged Dr. Abouleish and his staff to identify an alternative solution that would be as effective as chemical pesticides.

Shortly thereafter Sekem engaged in consultations with a group of experts from various Egyptian universities and research institutes. Some experts suggested involving entomologists knowledgeable in the development of insects harmful to cotton plants. Examination of the test fields revealed that insects such as aphids, phylloxera, and whiteflies proliferate with heat and that various caterpillars (e.g. genera *spodoptera* and *pectinophora*) thrive as leaves grow during the vegetative stage of plant growth. Researchers were particularly concerned with the finding that a single hot summer day could result in up to four generations of these dangerous insects feeding on unprotected crops.

Supported by a prominent entomologist from the University of Cairo who had studied the impact of pheromones on *spodoptera* moths, Sekem developed pheromone traps and

swiftly moved to large-scale testing in a nine-hectare cotton field in the Nile delta. Traps were effective in catching the moths before they could lay the eggs that would have otherwise become rapidly multiplying, leaf-eating caterpillars. The captivating pheromone fragrance also confused the pink bollworm, a particularly harmful species of pectinophora moth capable of destroying an entire crop. Pink bollworms exposed to the pheromones were unable to locate and damage the cotton capsules in which the actual cotton develops. However, the positive effects of the traps were not long lasting enough. The first year of experimentation concluded with eleven percent of cotton capsules damaged. The following year, through subsequent research, Sekem extended the duration of the traps' effect and crop damage was even more minimal than that experienced with synthetic pesticides. Moreover, raw cotton yield in the test fields was ten percent higher than the average yield in the fields in the area using chemical pesticides.

Armed with scientific proof of effectiveness of their biodynamic pest control method, Sekem and its collaborators organized 'The First International Organic Cotton Conference' in Cairo. Almost 120 specialists attended the conference and were able to visit one of Sekem's nineteen biodynamically farmed cotton fields during the harvesting season. Egyptian television covered the conference and broadcast positive reports about Sekem's work and results. The minister of agriculture and his staff attended the conference. Addressing the participants, the minister expressed his great admiration for Sekem's efforts but also his reservations and called for further testing.

Sekem regularly updated the minister about the results of the research. After each successful harvest, the minister requested doubling of the test area and chose some of the most infested land for further testing. After three years of successful test results, the minister decided to ban spraying of chemical pesticides by crop dusting planes over an area of 200,000 hectares—nearly a half of all land used for cotton cultivation in Egypt. When making this decision, the minister encountered strong opposition from his staff, which claimed that the ban would destroy cotton production in Egypt. One year later, upon reviewing results proving the viability of biodynamic pest control methods in large-scale cotton cultivation, the minister extended the ban to include all cotton fields in Egypt.

Just weeks after the total ban, a series of articles criticizing organic farming were published in major Cairo daily papers. Articles questioned the ability of organic agriculture to provide enough food for everyone. Many of the articles explicitly mentioned Sekem and described it as an elitist company, catering to Germans and to the rich who could afford the expensive prices of organic products. The articles accused Sekem of wanting to let the Egyptian people starve and fomented heated debate across Egypt. Dr. Abouleish received many threatening and some encouraging phone calls. Negative publicity did not affect sales of Sekem's products until a local paper published an article entitled "The Sun-Worshippers." A photograph of Sekem's employees standing in a circle on a Thursday afternoon during their end-of-week meeting accompanied the article. The author of the article quoted an anonymous Sekem employee who described the circle ritual (Rimac et al., 2012) as the worship of the sun. The journalist also cited a government education inspector who claimed to witness a situation in which Dr. Abouleish stood in front of the class in the Sekem School and asked the children, "Who is your God?" .When the children answered, "Allah!" Dr. Abouleish was claimed to have told the children, "No, not Allah. I am your Allah!"

The article circulated throughout Egypt causing indignation and turmoil. The prayer leaders in mosques around the Sekem mother farm claimed that Sekem employees did

not worship Allah and instigated animosity towards them. The local population harassed Sekem workers, calling them sun-worshippers and throwing stones at them. The head of the secret state security police summoned Dr. Abouleish and advised him to take legal action against the newspaper and its journalist. In addition to taking legal action, Dr. Abouleish organized a meeting at the Sekem mother farm with influential local religious and public figures. Initially, the meeting was dominated by a tense atmosphere of mistrust and anger. By the end of the day, however, relying on his profound knowledge of the Qur'an and connecting its teaching with ideas of anthroposophy¹ and Sekem's work, Dr. Abouleish demonstrated to his genuinely religious guests that Islam lived deeply in Sekem's values and practices and that the accusations against the organization were false. Meeting participants quickly spread the news and awarded Sekem a plaque stating that the community of sheiks verifies that Sekem is an Islamic initiative. Shortly after the meeting, Sekem hosted a group of journalists from major Egyptian newspapers who afterwards published a number of positive stories about Sekem. The paper that had published the "Sun-worshipper" article issued a public apology and fired the journalist who wrote the article. Although the courts eventually sided with Sekem, Sekem decided to forgive and settle the conflict peacefully.

4 Data analysis

I applied event-structure analysis (ESA) to my analysis of the data. ESA is a formal analytic procedure designed to analyse and interpret the temporal and causal sequences constituting the narrative of an event. Grounded in both narrative interpretation and formal mathematical logic, ESA enables preservation of the complex description of a process described in narrative as a sequential, temporarily unfolding whole while facilitating the development of a dynamic, causal interpretation of the narrative. I used the ESA software application Ethno©². Ethno enables researchers to dissect the narrative chronology and then, based upon a researcher's interpretation of the narrative and knowledge of the context, to reconstruct it with causal connections (Griffin, 1993).

Table 1 lists all critical events by their order in the chronology, and provides their abbreviation and description. Ethno© performed two basic analyses – prerequisite and composition analysis. Prerequisite analysis focused on logical connectivity among events and resulted in a diagram showing the prerequisite structure. Composition analysis produced a table showing how the narrative associated people with events, other people,

Table 1: Critical events of the focal process

<i>Abbrev.</i>	<i>Description of Action</i>	<i>Phases</i>
Tstn	Sekem obtains positive results from the pesticide test on its medical plants	Precipitating event
Srch	Sekem finds the source of pesticides	
Cmpl	Sekem complains to the minister of agriculture	Blocked

¹ Anthroposophy is a human oriented spiritual philosophy based on work of Rudolf Steiner that postulates the existence of an objective, intellectually comprehensible spiritual world accessible to direct experience through inner development. Ideas of anthroposophy have been applied in many areas including biodynamic farming and Waldorf education. Sekem business model is built around ideas of anthroposophy.

² © 1988, 1997, 2001, 2007 D. Heise

Rfsn	The minister refuses to ban pesticide spraying	opportunities
Cnsl	Sekem consults experts	Management of
Expr	Sekem and experts start experimenting with organic pest control	liability of
Ftng	Sekem and experts obtain encouraging initial results	deviance and
Coae*	Sekem and experts establish an organic products certification body	deviance asset (legitimization)
ORGN	Sekem and experts organize the 1 st international organic cotton conference	
BRDC	Egyptian TV broadcasts positive reports from the international organic cotton conference	
Spkg	The minister of agriculture speaks at the conference	
Rptg	Sekem repeats tests over expanded area	
Prsn	Sekem presents positive results	
Ord1	The minister bans the use of pesticides on 50% of the cotton crop	
Objc	Staff in the ministry of agriculture objects to the minister's decision	
Rcfr	Sekem reconfirms test results	
Ord2	The minister of agriculture issues a complete ban of the use of pesticides	Legalization
Crs1**	Hidden actors stimulate publication of first articles against Sekem	Management of
Pblc	Newspapers publish articles critical of organic agriculture and of Sekem	post-legalization
Thrt	Sekem receives anonymous threatening phone calls	resistance
Sprt	Sekem receives anonymous support phone calls	(legitimization in the symbolic context)
Crs2**	Hidden actors stimulate publication of the "Sun-worshipper" story	
JRVS*	Journalist visits Sekem	
Jrnl	Local journal publishes an article accusing Sekem of Sun-worshipping	
HRSM	Sekem workers are harassed by local population	
Spic	Sekem founder meets with the head of secret state police	
Crte	Sekem starts a court case against the newspaper and journalist	
Imms	Imams speak against Sekem in mosques	
FTGH	Sekem fights back peacefully and meets with imams and local leaders	
Islm	Imams and local leaders change their opinion	
Prsc	Sekem organizes a press conference at the farm	
Nart	Newspapers publish positive articles about Sekem	
Dncn	The newspaper denounces the original article and fires the journalist	
Crted	The court decides in favour of Sekem	
FRGV	Sekem forgives the newspaper	

* Implied events; ** Unverified allegations

and non-human entities. I used Ethno© ESA Analyse program to verify my reasoning and Ethno© ESA Instantiation program to develop abstract concepts and link specific events to a causal representation among the abstract concepts. Figure 1 shows the results of ESA analysis.

5 Discussion

In comparison to conventional agriculture, biodynamic agriculture in Egypt was much more recent and has been lacking scientific stamp of approval. Its unconventional methods made it incomprehensible for wider social audiences, which consequently have classified it as an alternative method (Selg, 2010). Practitioners of biodynamic cultivation have broken social norms (i.e., norms of conventional agriculture) governing agricultural practices and thus engaged in illegitimate behavior.

At a very basic level, entrepreneurs (individuals and organizations) using illegitimate practices face a relatively simple choice: (i) they can try to become legitimate in the eyes of wider audiences in society, or (ii) they can position themselves and their products as idiosyncratic, not suited for everyone. Sekem, followed the second option, and saw biodynamic agriculture as an opportunity to build a thriving business focused on a small fringe segment of consumers interested in organic products.

The positive pesticide test was the event that destabilized Sekem's established practices of biodynamic cultivation of medical plants. Unable to restore its social order, that is, to continue with its standardized means of action while pursuing its goals, Sekem found itself facing the situation of *'blocked opportunities'*. In order to continue exploiting its opportunities (i.e., biodynamic cultivation of medical plants), it had to move from the fringes towards the centre of the Egyptian sector of agriculture and gain legitimacy for its biodynamic practices among key stakeholders in Egypt. In other words, Sekem found itself under pressure to "engage in nonconforming rather than conforming conduct" (Merton 1968: 186). By accepting wider social values and rejecting institutionalized means of acting as specified by influential reference groups, Sekem engaged in innovative mode of deviant behavior (Merton, 1968: 195) or constructive deviance (Warren, 2003: 629).

Thus the process of innovation starts when an entrepreneur chooses to act on *'blocked opportunities'* by breaking norms of influential reference groups in order to achieve organizational goals that are aligned with hypernorms. It is important to note that existence of *'blocked opportunities'* and potential rewards do not guarantee that entrepreneurs will act on them. The likelihood of an innovative mode of acting is mediated by the extent to which entrepreneurs have internalized cultural norms as well as their personal values. Furthermore, for deviant behavior to occur, it is necessary to have entrepreneurs able and willing to resist the pressure to abandon their means of acting.

Entrepreneurs operate in extraordinarily complex institutional environments where rather than to disparate individuals, informal groups or unorganized publics they are answerable to diverse institutional constituents often holding conflicting perceptions and expectations. Interpretations of deviance of entrepreneurs are rarely clear-cut or uniformly shared (Ermann and Lundmann, 1978). Some constituencies might regard certain innovative entrepreneurial practices as undesirable or hazardous while others might see them as acceptable or even beneficial. Thus, *'liabilities of deviance'* are managed in highly 'polyarchic contexts' (Zald, 1978).

From Figure 1 it is possible to see differences among actors involved in the innovation process. While involvement of some actors (e.g., experts and religious authorities) was restricted to particular phases of the process, involvement of other actors

(e.g., Sekem and public servants) was more continuous. However, it would be wrong to conclude that based on their limited activity some actors were less important than the others. Rather, we could say that timing and duration of involvement was a consequence of private interests and strategies. Furthermore, some actors were hidden and their participation in the focal event was imputed based on the activities of other actors. Resistance and support of hidden actors was clandestine. Instead of dealing directly with the entrepreneur they chose to act through some intermediary actors. For instance, fertilizer producers used media and religious authorities to resist legalization of Sekem innovative methods.

Finally, as demonstrated through the example of religious authorities, the perception of deviance may experience almost instant swings from being a liability to becoming an asset. Thus, perceptions of deviance are rarely fixed over time. They are subject to shifts as a result of changing social values, fads, cultural orientations, and power balance in the society. Organizational practices that were once desirable and respectable, can, under altered circumstances, be seen as harmful, inappropriate or even morally questionable (e.g., Maguire and Hardy, 2009).

As perceptions of deviance are more likely to be contested than shared, that is some reference groups will see new practices as positive while other as negative, the main task facing entrepreneurs, once the innovation process has been initiated, is that of management of deviance perception. On one hand, their efforts should be directed on reducing '*liability of deviance*' and its effects through normalization, a transformation of their illegitimate processes into routine and taken-for-granted activities. One way to do it is to rely on already legitimized systems of valuations to connect to important cultural myths (Abrahamson, 1996). For instance, Sekem used traditional scientific methods of evaluation of its biodynamic cotton protection practices in order to gain legitimacy for its solution with the minister of agriculture.

On the other hand, entrepreneurial efforts should be simultaneously directed on increasing '*deviance asset*' and its impacts through mobilization of influential supporters, pooling their resources, and speaking with a single voice (Zald, 1978). Cooperating with reputable scientists and organizing conferences are a few of many strategies that entrepreneurs use to build support, appease suspicious or opposing stakeholders as well as to diffuse vocal opposition to opinions of these stakeholders.

By legalizing and legitimizing new practices, the regulating body, an important stakeholder in any innovation process, substantially reduces the '*liability of deviance*'. However, although the perception of deviance might have disappeared or diminished in the eyes of influential stakeholders, the legitimization process does not have to end with the regulation of new practices. Simultaneously with the legalization of new practices, new rules may delegitimize the old ones, directly affecting stakeholders whose status and benefits were directly tight to the old rules. It is likely that these actors will continue to resist new practices even after they become legal and widely legitimate.

Increasingly, innovative practices (e.g., cultivation of genetically modified food and stem cell research), even when regulated, need to be legitimated in the symbolic contexts. A number of organizational scholars have highlighted the central role of symbolic management (Pfeffer, 1981) and have argued that the resolution of many organizational problems is accomplished through the management of meaning (Brown, 1994; Cavanaugh and Prasad, 1994). The role of media is especially important in this context.

Another form of post-regulation resistance may be created by mobilization of certain stakeholders who have high standing and credibility in the wider society and are not directly affected by the new practices. Faced by the opposition of these influential stakeholders, entrepreneurs can be seriously hurt by this unexpected '*liability of deviance*', raising questions about their rights to continue with new practices as well as to exist as organizations. In this situation, the main task for entrepreneurs is to recover their

moral standing by reducing the social disapproval that engulfs them by selectively orienting their strategies towards this vocal and influential stakeholder rather than towards the broader public (Rueff and Scott, 1998). One way to do this, for instance, is to embed entrepreneurs' organizations and their practices in prominent cultural narratives. A number of institutional theorists (e.g., Abrahamson, 1996; Lounsbury and Crumley, 2007) have noted that organizations frequently align themselves with salient cultural myths in order to secure legitimacy. Specifically, by skilfully aligning ideas of anthroposophy with teachings of Islam, Sekem was able to overcome the opposition from the religious authorities created after the publishing of "The Sun Worshipers" article.

6 References

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Appendix A: Tactics used to ensure validity of research design^a

<i>Validity Test^b</i>	<i>Suggested case study tactics and rationale^c</i>	<i>Implementation of case study tactics</i>
Construct validity: establish correct operational measures for the concepts being studied	Data Triangulation	I used the following sources of evidence: (1) Interview data; (2) Participatory and direct observation derived data; (3) Archival data; (4) Review of drafts by academics not co-authoring the paper; (5) Review of transcripts by 9 key informants.
	Establish chain of evidence	I took the following steps to establish the chain of evidence (refer to “Methods” section): (1) I explained how I accessed the data; (2) I described how actual course of research affected data collection (e.g., interview protocol evolution); (3) I clarified ESA and Ethno© data analysis procedures.
	Have informants review draft case study report	At this point, none of the informants have reviewed the draft case study report.
Internal validity: establish a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.	Have a general analytical strategy	I relied on institutional theory and labelling paradigm of deviant behavior in sociology and management literature to guide the organization and the analysis of the case evidence.
	Have a dominant analytical procedure	My dominant analytical procedure was explanation building using: (1) narrative to build an explanation that gives a theoretical insight in how the innovation process starts and evolves; (2) counterfactual arguments (historical, theoretical, logical, and empirical) to assess importance and meanings of key actions, and to rule out alternative explanations.
	Use analytical technique to manipulate the data	I used the following techniques to organize the case evidence: (1) I used Ethno© to manipulate data and produce tables and charts; (2) I merged Ethno© outputs into a table and the final ESA diagram (refer to Table 1 and Exhibit 1).
External validity: establish the domain to which a study’s findings can be generalized, keeping in mind that the aim is to generalize to theory, not to the population.	Use replication logic in multiple case studies.	Replication logic is not applicable since this is a revelatory case.
	Provide rationale for case study research	Explanation why this case study was appropriate in view of research question is provided in “Methods” section.
Reliability: demonstrate that the operations of a study – such as the data collection procedures – can be repeated, with the same results.	Provide details on case study context	“Methods” section provides description of Egyptian socio-economic and institutional context as well as of its cotton cultivation sector.
	Develop a case study database	My case database includes: interview transcripts, voice and video recordings, copies of archive materials, transcripts of my observations, and case study notes.
	Organization mentioned by own name	The name of the organization is explicitly mentioned.

^a Based on Ariño & Ring (2010: 1079)

^b Source: Yin (2003: 34)

^c Based on Yin (2003) and Gibber & Ruigrok (2010: 717)

